

height and thickness of the dam section compared to the Wildcat and Eagle Canyon Dams, and considering the accessibility of the site.

The cost estimate for partial removal assumes excavation of the masonry structure between the abandoned fish ladder on the left abutment and the canal wall on the right abutment, including removal of the 14- by 8- foot radial gate and hoist, the 2-foot-wide fish ladder gate and hoist, the Alaska Steeppass fish ladder, and the steel footbridge from the right abutment. Other miscellaneous metalwork to be removed includes the pipe handrails and CMP standpipes. The cost estimate for full removal includes removal of the abandoned fish ladder on the left abutment and of the masonry gravity weir structure on the right abutment. Any removal or modification of the existing Coleman Canal retaining wall are assumed to be included in the cost estimates for the direct connection pipe from the Inskip Powerhouse tailrace.

d. Site restoration. - The overflow portion of the masonry dam would be removed to the original streambed grade, with the rubble distributed across the downstream channel and the concrete waste removed from the site. The proposed partial removal plan would retain the original fish ladder structure on the left abutment, which has already been modified for abandonment, and the existing masonry gravity weir structure on the right abutment. Backfill behind the weir structure would be shaped and seeded to provide a natural appearance. Sediment management at the site is discussed in Section G, which may require the excavation of a new channel through the upstream sediment. A final site inspection should be performed following the winter and spring runoff to confirm the adequacy of the dam removal and upstream channelization work.

F. Waste Disposal

1. Construction Debris

Onsite disposal of construction debris should be used to the maximum practicable extent at all three damsites, to reduce costs. The masonry materials are believed to generally consist of rounded cobbles ranging between 6 inches and 2 feet in size, within a cement mortar matrix, and can safely be left within the stream channels, provided they are distributed sufficiently to prevent ponding. Waste concrete and other debris should be buried outside the stream channels, either within adjoining canals (as at Eagle Canyon Dam) or offsite. If a suitable disposal site cannot be found near each damsite, a commercial site, such as Anderson-Cottonwood Disposal (phone 530-221-4784), may be used. This study assumes disposal sites will be located within 1 mile of each damsite.

Mechanical items and miscellaneous metalwork removed from the damsites may have some commercial value, and should be salvaged to help offset removal costs, as well as for environmental (recycling) considerations, if practicable. Landowners in the area have reportedly expressed some interest in the 24-inch-diameter pipe from the Wildcat Canal, and the semicircular flume plate sections from the Eagle Canyon Canal. The California Department of Fish and Game has expressed interest in the Alaska Steeppass fish ladders at the dams, for potential use at other sites. The structural steel slide gate and Limitorque operator, and the access stairways, at Eagle

Canyon Dam would probably have some resale value, as would the access footbridge at Coleman Dam. PG&E may wish to retain some of the control equipment for use at their other dams. The older gates, hoists, pipe handrails, CMP standpipes, and miscellaneous steel sections may only have scrap value. Short's Scrap Metal (phone 530-243-4780) or other area recycling firms may be willing to purchase these items. Cost estimates for this study do not include any salvage value for any items removed from the dams.

2. Hazardous Waste

Hazardous materials anticipated to be encountered as a result of the dam removal work include minor amounts of lead-based paints, oil, and grease. A slight potential for PCB (polychlorinated biphenyl) contamination may exist due to the presence of upstream powerplants. Site assessments should be performed to establish all potential environmental hazards existing at each damsite prior to final designs. A visual inspection and regulatory/literature search should first be performed to establish the possible presence of hazardous materials, followed by a more detailed evaluation to confirm the presence and extent of the hazardous materials and to plan appropriate actions for removal [8]. For the purpose of the current study, no hazardous waste is assumed to be present at any of the sites which would significantly impact costs for dam removal.

G. Sediment Management

1. General

Sediment has almost completely filled the reservoirs impounded by the three diversion dams proposed for removal on North Fork Battle Creek and South Fork Battle Creek. The Sedimentation and River Hydraulics Group (D-8540) was requested to assess the feasibility of allowing the river to naturally erode the sediment deposited behind these dams.

Potential problems associated with allowing the river to naturally erode sediments behind a dam include [8]:

- Temporary increase of turbidity and associated environmental problems.

- Sediment deposition downstream, causing increased flood stage, localized blockage of facilities along the river, and damaged fish habitat.

- Movement of sediment wave downstream.

- Release of contaminated sediment.

Using simple hydraulic and sediment transport analysis, this section addresses the likelihood that such problems will occur at this site.